

MONTHLY WEATHER REVIEW,

JULY, 1873.

WAR DEPARTMENT,

Office of the Chief Signal Officer,

DIVISION OF

TELEGRAMS AND REPORTS FOR THE BENEFIT OF COMMERCE AND AGRICULTURE.

STORMS.

During the month of July, 1873 thirteen areas of low barometer have been recorded on the daily weather maps of the Signal Office; the tracks pursued by these will be found on the accompanying map No. 1; they have in general passed centrally over the extreme northern limit of the United States. This feature has indeed been this year rather more noticeable than in former years, as is seen from the following statement:

July, 1871.	The mean latitude of the tracks of 15 centres of low barometer; was	45°.
" 1872.	" " " " 14 " "	44°.
" 1873.	" " " " 13 " "	47°.

As in former years during this month, so in the present year, with scarcely an exception, the areas of low pressure first became apparent in or beyond Dakota and Manitoba. On most occasions the appearance of a low barometer in the Northwest has been preceded by slight barometric depressions on the coasts of Oregon and California, but it has been impossible to decide whether the disturbances have passed from the Pacific Ocean eastward or have originated in the Rocky Mountains of British America.

The numerous local storms that are experienced during the summer months have a certain relation to the large areas of high and low barometer, to the topography of the country, the position of the ocean and other bodies of water, &c. &c., all of which may be better understood from map No. 2, on which are drawn with some approach to correctness the lines of equal storm frequency for the month of July. The local storms (which are almost invariably attended with lightning &c.) have been most numerous in Florida, on the west and southwest side of the area of high barometer that prevails during July on the Atlantic, between the latitudes of 12° and 30° north. The region of next greatest frequency is in Ohio and western Pennsylvania, where the south and southwest winds attending the areas of low pressure rise up over the high country of those States. The storm frequency diminishes as we proceed from the Gulf coast northward over the low, flat country and northwestward toward the high arid plains; on the other hand it increases as we proceed from the middle and east Atlantic coasts westward up a rapid slope to the summit of the Appalachian range. The local storms are least frequent on the dry plains west of the valley of the Mississippi river, and there are indications of a region of diminished frequency in the northern part of the Province of Ontario, though this may possibly be due to the scarcity of our stations in that region.

WINDS.

No winds of special severity have been reported during this month, except the tornado of July 3, at Indianapolis. The winds have reached the limit of *high* (a velocity of thirty miles an hour) only twice in the Middle Atlantic States and thrice in Dakota.

and northern Minnesota. The prevailing winds, (by which is merely meant the wind that has been recorded the greatest number of times,) are shown by arrows on Map No. 3, from which we also perceive something of the connection between the winds and the isobars. In general it may be stated, that south and southeast winds have prevailed in the Gulf States, Iowa and Minnesota, but elsewhere over the country east of the Rocky Mountains the prevailing winds have been from the south, southwest and west.

RAIN - FALL.

The total amount of rain during the month appears to have been in excess in Indiana, Illinois and Michigan and on the southern border of Lakes Superior, Erie and Ontario, as also in New England. The reports from the summit of Mount Washington, show a rain-fall of thirteen and a half inches, as contrasted with only three and a half inches in July, 1872; on the other hand the rain-fall of June was three and a half inches, while in June, 1872, eighteen and a half inches were reported; by combining the two we obtain for June and July together in 1872, twenty-two inches, and in 1873, seventeen inches. A deficiency of rain is apparent in the province of Ontario, on the middle Atlantic coast, over the lower Mississippi valley and in the Northwest. The details of the rain-fall are given for each geographical subdivision in the accompanying table.

TEMPERATURE.

The temperature has very generally averaged one or two degrees lower than for the corresponding month of 1872, which latter was indeed in many places one of the warmest on record. Compared with the average of many years, the past month seemed to have been from one to four degrees warmer than the normal temperature over the Middle Atlantic and the Eastern Gulf States. In general, however, over the rest of the country east of the Rocky Mountains the temperature has been slightly below the average, the deficiency amounting to one or two degrees in the valley of the Mississippi river.

The accompanying table shows for each geographical subdivision the general mean temperature, as observed and as compared with normal values resulting from many years of observation.

The details of the distribution of temperature may be seen from the isothermal lines given on Map No. 3; and which hold good for the general surface of the earth.

The monthly range of temperature, or the difference between the highest and lowest temperatures that have occurred during the month, is given by the lines of equal monthly range on Map No. 4. It will be seen that the range is greatest in high and dry localities, and least in low and damp regions. The range also increases decidedly with the latitude, even on the Atlantic coast, a phenomena doubtless due to the greater charges in cloudiness and humidity.

RIVER AND OCEAN TEMPERATURES.

Reports have been received for the last ten days of the month from some of the stations that have, at the suggestion of the United States Commissioner of Fish and Fisheries, been furnished with apparatus for observing the temperatures of the water in the rivers, bays, &c., the results promise to be of general meteorological interest. The general result of these observations (the first of their kind) are given in the table printed on the border of Map No. 3, where the comparison may easily be made between the temperature of the water and that of the air, &c., &c.; the water temperatures refer to the lowest stratum of water near the bottom of the river or bay, and the observations are made daily at 3 p. m.

In general, it is found that the range of temperature increases very regularly as we proceed from Cape Hatteras northeastward. The figures for each day show that the